SLOVENSKI STANDARD
oSIST prEN ISO 8655-4:2020

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Volumetrične naprave, delujoče na bat - 4. del: Razredčevalci (ISO/DIS 8655-4:2020)

Piston-operated volumetric apparatus - Part 4: Dilutors (ISO/DIS 8655-4:2020)

Volumenmessgeräte mit Hubkolben - Teil 4: Dilutoren (ISO/DIS 8655-4:2020)

Appareils volumétriques à piston - Partie 4: Diluteurs (ISO/DIS 8655-4:2020)

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71.040.20	Laboratorijska posoda in aparati	Laboratory ware and related apparatus

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Piston-operated volumetric apparatus —

Part 4:
Dilutors

Appareils volumétriques à piston —

Partie 4: Diluteurs

ICS: 17.060

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 48, *Laboratory equipment*.

This second edition cancels and replaces the first edition (ISO 8655-4:2002 and ISO 8655-4:2002/Cor 1:2008), which has been technically revised.

The main changes compared to the previous edition are as follows:

— ISO 8655-7 and ISO 8655-9 have been added as normative references;

— Tables 1 and 2 have been revised.

A list of all parts in the ISO 8655 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

ISO 8655 addresses the needs of:

— manufacturers, as a basis for quality control including, where appropriate, the issuance of manufacturers' declarations;

— calibration laboratories, test houses, users of the equipment and other bodies as a basis for independent calibration, verification and routine checking.

The tests specified in the ISO 8655 series are intended to be carried out by trained personnel.

Piston-operated volumetric apparatus —

Part 4:
Dilutors

1 Scope

This part of ISO 8655 specifies

— metrological requirements,

— maximum permissible errors,

— requirements for marking and

— information to be provided for users,

for dilutors with a sample uptake capacity (In) from 5 µl to 10 ml and a diluent capacity (Ex) from 50 µl to 100 ml. They are designed to deliver the sample and diluent together in measured proportion and measured volume.

NOTE General requirements and definitions of terms for piston-operated volumetric apparatus are given in ISO 8655-1. The gravimetric reference measurement procedure for the determination of volume is given in ISO 8655-6. Alternative methods for the determination of volume are described in ISO 8655-7. For safety requirements of electrically powered dilutors, see regional or national safety standards.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3696:1991, *Water for analytical laboratory use — Specification and test methods*

ISO/DIS 8655-1:2020, *Piston-operated volumetric apparatus — Part 1: Terminology, general requirements and user recommendations*

ISO/DIS 8655-6:2020, *Piston-operated volumetric apparatus — Part 6: Gravimetric reference measurement procedure for the determination of volume*

ISO/DIS 8655-7:2020, *Piston operated volumetric apparatus — Part 7: Alternative test methods for the determination of volume*

3 Terms and definitions

For the purposes of this part of ISO 8655, the terms and definitions given in ISO/DIS 8655-1:2020 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

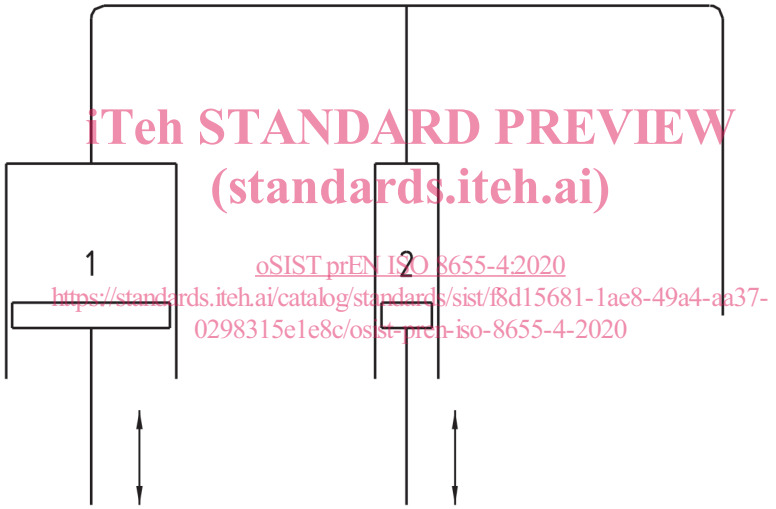
4 Principle of operation

A dilutor is designed to aspirate accurately a measured volume of a sample liquid and to deliver it together with an accurately measured volume of diluent. Dilutors may be operated manually, electrically, pneumatically or hydraulically and may be hand-held, bottle-top mounting or free-standing bench-top apparatus. They may also be automated analyser's components. The drive components may be integral with, or manually separable from the volumetric measuring components (change-over units).

Prior to delivery of diluent, the diluent piston system is charged by aspiration of diluent from a reservoir. After air- bubble-free filling of the system, diluent is drawn into the volume measuring cylinder by the diluent piston, either directly, via the uptake and delivery probe, or indirectly, from a reservoir until a volume controlling limit is reached. A measured volume of sample is then aspirated into the uptake and delivery probe.

The uptake of sample may be controlled by a second limit to the movement of the diluent piston, or it may involve a second, dedicated, cylinder and piston with valves. During delivery, the sample volume in the uptake and delivery probe is expelled, followed by the measured quantity of diluent.

Manufacturers' instruction manuals shall contain detailed and specific information about the proper operation of dilutor.



Key

1 Volume of diluent

2 Piston for sample uptake

Figure 1 — Schematic drawing of a dilutor

5 Adjustment

5.1 Basis of adjustment

A dilutor shall be adjusted for the delivery (Ex) of its nominal volume (or selected volume, in the case of a variable-volume model) and if applicable also for its sample uptake (In).

For countries that have adopted the standard reference temperature of 20 °C, the adjustment shall be for the temperature 20 °C, a relative air humidity of 50 % and a barometric pressure of 101,3 kPa, when handling grade 3 water as specified in ISO 3696.